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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,438	09/26/2003	Tetsuya Yamamura	0305369	5065

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Intellectual Property Department
Mayer Brown Rowe & Maw LLP
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Washington, DC 20006-1101

EXAMINER

MCCLENDON, SANZA L

ART UNIT PAPER NUMBER

1711

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/671,438

Applicant(s)

YAMAMURA ET AL.

Examiner

Sanza L McClendon

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-20, 26-53 and 59-65 is/are rejected.
- 7) ☒ Claim(s) 21-25 and 54-58 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/898,407.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-8, 10-11, 13, 27, 30, 33, 36, 39, 42, 45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chikaoka et al (WO 96/35756) and US 6,103,025.

Note: US 6,130,025 is being used as the English language equivalent for WO 96/35756.

Chikaoka et al teaches stereolithography resin compositions comprising a cationic polymerizable compound, a cationic photoinitiator, and a thermoplastic polymer. Said cationic polymerizable compounds can be epoxy compounds selected from aromatic, alicyclic, and aliphatic epoxy resins, wherein glycidyl esters of fatty acids and epoxidized linseed and soybean oil are disclosed as useable aliphatic epoxide compounds. The epoxy compounds are taught as useable in combinations. In addition, the epoxide compounds taught appear to read on the instantly claimed molecular weights. Chikaoka et al teaches at least 50 wt% of the cationic polymerizable compound is composed of epoxy compounds having two or more epoxy groups per molecule. The cationic initiator may be an onium salt. Chikaoka et al teaches additional components can be added to the composition, such as radically polymerizable compounds and hydroxyl functional compounds—see columns 8 and 9, wherein acrylate, (meth) acrylate, and polyol compounds are disclosed. Per column 8 and

Art Unit: 1711

the examples dipentaerythritol hexa-functional (meth) acrylates are disclosed. Said resin compositions are useable in stereolithography applications. Said process comprises mixing the compositional components to form a liquid state, taking a given portion of the resin composition exposing it to radiation cure to form a cured layer of resin composition, apply another layer of resin composition onto the cured layer and exposing to radiation cure, and repeating the process until the desired object has been formed—see column 11, lines 42-57.

While Chikaoka et al does not explicitly expressly teach adding oxetane compounds to the composition, Chikaoka et al does teach that remaining 50% of the cationically curable organic compound can be chosen from epoxy compounds having one epoxy group per molecule or can be chosen from other cationically polymerizable compounds, such as oxetane compounds. Therefore the examiner deems that it would have been obvious for an artisan of ordinary skill in the art to choose an oxetane compound as a component in the composition. The motivation would have been a reasonable expectation of obtaining a faster cure speed in addition to adding flexibility to the obtained object in the absence of argument to the contrary and/or unexpected results. It is deemed that the resin compositions as described by Chikaoka et al render the instant composition obvious and known in the prior art and as such it is deemed the properties (Young's Modulus, dimensional accuracy, and etc among others) as found in the claims are inherent to the compositions as described.

3. Claims 1-13 and 15-20, 26-53, 59-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chikaoka et al (WO 96/35756) in view of Igarashi et al (5,674,922) as evidenced by Ohkawa et al (5,434,196).

Chikaoka et al teaches stereolithography resin compositions comprising a cationic polymerizable compound, a cationic photoinitiator, and a thermoplastic polymer. Said cationic polymerizable compounds can be epoxy compounds selected from aromatic, alicyclic, and aliphatic epoxy resins, wherein glycidyl esters of fatty acids and epoxidized linseed and soybean oil are disclosed as useable aliphatic epoxide compounds. The epoxy compounds are taught as useable in combinations. In addition, the epoxide compounds taught appear to read on the instantly claimed molecular weights. Chikaoka et al teaches

Art Unit: 1711

at least 50 wt% of the cationic polymerizable compound is composed of epoxy compounds having two or more epoxy groups per molecule. The cationic initiator may be an onium salt. Chikaoka et al teaches additional components can be added to the composition, such as radically polymerizable compounds and hydroxyl functional compounds—see columns 8 and 9, wherein acrylate, (meth) acrylate, and polyol compounds are disclosed. Per column 8 and the examples dipentaerythritol hexa-functional (meth) acrylates are disclosed. Said resin compositions are useable in stereolithography applications. Said process comprises mixing the compositional components to form a liquid state, taking a given portion of the resin composition exposing it to radiation cure to form a cured layer of resin composition, apply another layer of resin composition onto the cured layer and exposing to radiation cure, and repeating the process until the desired object has been formed—see column 11, lines 42-57.

Chikaoka et al does not expressly teach using an oxetane compound having the formulas as found in claims 15-26, 51 and 65 or adding 3-50-wt% of a further epoxy compound. Igarashi et al teaches cationic polymerizable compositions comprising hydroxyl-containing oxetane and epoxy compound in combination with onium salt initiators. Igarashi et al teaches oxetanes having the general formula (1), which reads on the oxetane compounds of claims 1, 8, 15-20, 26, 51-53, and 65. Igarashi et al teaches the oxetane of general formula 1 in combination with alicyclic epoxides provides a composition having rapid curability, as well as, excellent inner curability. Chikaoka et al and Igarashi et al are analogous art because they are from the same field of endeavor that is the art of cationically curable epoxy/oxetane compositions. Therefore it would have been obvious for an artisan of ordinary skill level in the art to use the oxetanes and a further alicyclic epoxide as described by Igarashi et al in the compositions as taught by Chikaoka et al. The motivation would have been a reasonable expectation of obtaining a resin composition having rapid curability, as well as, excellent inner curability in the absence of evidence to the contrary and/or unexpected results.

The resin compositions as described by the combination of Chikaoka et al and Igarashi et al read on the instant claims because from the teachings an artisan of ordinary skill in the art would have found it obvious to chose an aliphatic epoxy as described in claim 1 because aliphatic epoxides are known to provide excellent optical properties as evidenced by Ohkawa et al column 4, lines 6-8, an oxetane compound of general formula 1 and a

Art Unit: 1711

further epoxy, such as an alicyclic epoxy compound with a cationic initiator to obtain a photo-fabricated object. The motivation being a reasonable expectation of obtaining a photofabricated object having excellent curability, as well as, excellent inner curability and excellent optical properties as taught by both Chikaoka et al and Igarashi et al. The instant combination of references is deemed to read on the instant invention and as such it is deemed the properties (Young's Modulus, dimensional accuracy, and etc) as found in the claims are inherent to the compositions as described.

Priority

4. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Allowable Subject Matter

5. Claims 21-25 and 54-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach compositions as found in claims 1 and 51 where the oxetane compound comprises two or more oxetane groups per molecule.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,434,196 and 5,525,645 to Ohkawa et al teaches optical moldings from cationic polymerizable compositions, which may be combinations of epoxides with other cationic compounds, such as oxetanes. 6,127,085 to Yamaura et al teaches photo-fabrication objects from cationic polymerizable compositions that may comprise

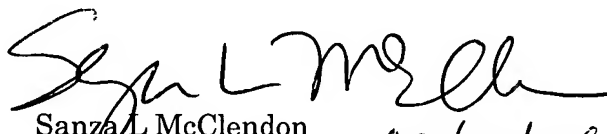
Art Unit: 1711

oxetanes. US 5,985,510 to Akutsu et al teaches photo-fabrication objects from cationic polymerizable compositions that may comprise oxetanes.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (571) 272-1074. The examiner can normally be reached on Monday through Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sanza L McClendon
Examiner

9/24/04

Art Unit 1711

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